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The Efficiency and Cost of COLLECTING EGGS from Farms in Ohio

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The Efficiency and Cost of

COLLECTING EGGS

from Farms in Ohio

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INTRODUCTION

A few years ago, most of the eggs produced in the midwest were delivered to the market outlet by the producer. In this section of the country the main market outlets were grocery stores, cream stations, and other small buyers not properly equipped to handle eggs to maintain their quality. Efforts of egg marketing organizations to market fine quality eggs soon emphasized the importance of buying eggs direct from the producer on a grade or quality basis, and also emphasized the importance of picking the eggs up at the farm.

Because of the convenience of having the eggs picked up, most farmers today will not consider a market outlet which requires the producer to deliver his product.

The development of quality egg marketing programs has also brought out the desirability of collecting eggs from farms more than once a week, and the need of specially designed trucks to protect eggs in transit. All of these developments have played an important part in providing better quality eggs, but have also added to the costs of marketing.

Much of the increase in marketing costs has resulted from additional services demanded by the consumer, but some of it can also be attributed to added services demanded by the producer.

The increasing importance of the practice of assembling eggs direct from farms emphasizes the need for studying the factors affecting the efficiency and cost of collecting eggs at the farm.

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PURPOSE OF STUDY

The study was designed to obtain data on:

1. The comparative efficiency of assembling eggs on farm egg pick-up truck routes in a densely poultry populated area and a sparsely poultry populated area.
2. The comparative efficiency of assembling eggs on farm egg pick-up truck on the same routes during summer and winter.
3. Where the eggs are located on the farm when "picked-up" by the truck.
4. The costs per case and per mile of collecting eggs by a fleet of trucks operated by two egg marketing organizations operating in Ohio and Indiana.
5. The importance of labor and truck operating costs per mile in collecting eggs at the farm.

DESCRIPTION OF PROCEDURE IN STUDY

The study of the amount of time spent in the different operations in collecting eggs at the farm was carefully tabulated by investigators accompanying the farm egg "pick-up" trucks.

Three farm egg "pick-up" truck routes operating in a concentrated poultry area of Northwestern Ohio and three similar routes operating in a sparsely poultry populated area of Southeastern Ohio were studied in August and December of 1949. The drivers were instructed to operate the route in the normal routine manner, and the investigator checked the time and mileage involved in the various operations and recorded it on special forms.

Data was secured on: 1. Amount of time involved in loading and preparing the truck for the trip; 2. Speedometer reading at the start of the route; each time the truck left the highway to make a farm pick-up of eggs; when it returned to the highway and upon completing the route; 3. Time that the truck left the plant and the time it left the highway and returned to it, at each farm pick-up of eggs; 4. Amount of time involved in waiting for producers to get eggs ready, or amount of time spent in non-business conversation; 5. Volume of eggs collected at each stop; 6. Place where the eggs were located on the farm. (Many of the producers carried the eggs out of the basement or egg room to the porch or sidewalk to save the trucker time, especially those on the first part of the route where the eggs are picked up early in the morning.)

This information was summarized and averaged for the routes in each of the two sections of the state and for both the summer and winter.

Each of the marketing organizations operating the routes studied, supply the producers with case cards. The producer fills out and attaches a case card to one end of each case. This case card shows the producer's name and address, the color of the eggs, the number of dozens of eggs in the case and the total number of cases of eggs and total number of dozens of eggs in the entire shipment.

The eggs of each producer are graded separately after they reach the plant, and the producer is paid by check which is delivered to the producer when his eggs are picked up the following week. This method of picking up the eggs at the farm is efficient because the trucker simply takes the egg check and empty cases to the location of the eggs and carries back the eggs. Both organizations use fiber cases, which make it possible for the operator to carry the case by the end, and enables him to carry a case in each hand. They also carry a rubber tire hand truck on the egg truck to use when the eggs are located some distance from where the truck is parked and for saving extra trips when more than two cases of eggs are involved. There is no delay from counting eggs, transferring eggs to cases, making an estimate of the number of different size and dirty eggs or in computing the amount due the producer and paying for the eggs.

On the routes studied, the truck operator actually saw the producer or a member of the family at less than 25 percent of the farm stops. The eggs are ready at the same place each week, the truck arrives at practically the same time each week and the driver leaves the same number of empty cases as the number of cases of eggs picked up.

DENSITY OF POULTRY POPULATION IN AREAS STUDIED

The two areas in which the farm egg pick-up truck routes are located were purposely selected to determine the effect of density of poultry population on the efficiency in collecting eggs at the farm.

While poultry was relatively important as a source of gross cash farm income in both of the areas covered by the truck routes studied, the total poultry population and the poultry population per square mile was relatively much smaller in the southeastern Ohio area.

The total poultry population of the four counties in Northwest Ohio was 1,442,000 chickens in 1951, compared with a total poultry population of 618,000 chickens in the five Southeastern Ohio counties involved in the study.

In the Northwest Ohio area there were 1,549 flocks of 200 layers or more in 1940 compared to 409 such flocks in the Southeast Ohio area. The density of poultry population in the Northwest Ohio area was 785 chickens per square mile in 1951 compared to 262 chickens per square mile in the area involved in Southeast Ohio.

TABLE 1.—Comparison of the density of poultry population in the areas served by the farm pick-up egg routes studied in Northwestern and Southeastern Ohio

Section of state	Counties	Rank of poultry as source of gross cash farm income—1949	Total poultry population 1951 (estimated)	Average number chickens per farm 1945	Number chickens per square mile 1951 (estimated)	Number of flocks with 200 or more layers (1940)
Southeast	Athens	2	111,000	54	230	69
	Hocking	3	74,000	57	181	35
	Morgan	2	132,000	93	322	144
	Perry	4	126,000	74	313	60
	Washington	3	175,000	71	282	101
	Total		618,000	69	262	409
Northwest	Allen	4	259,000	108	640	192
	Hancock	5	304,000	112	573	185
	Henry	1	429,000	174	1021	593
	Putnam	2	450,000	162	938	579
	Total		1,442,000	139	785	1,549

FARM EGG "PICK-UP" TRUCK ROUTES

The effect of the difference in density of poultry population in the two areas on the mileage and time required to pick up eggs at the farm is reflected in the following data.

Total Mileage, Farm Stops and Eggs Collected

The average length of the routes studied in Northwestern Ohio was 50 miles shorter in December and 22.8 miles shorter in August than the routes studied in Southeastern Ohio.

The Southeastern Ohio routes averaged 14 more farm stops in December and one more stop in August than the Northwest Ohio routes studied, although more farm stops were made, an average of 32 fewer cases of eggs were collected on the Southeastern routes in December and 40 cases less in August.

The average number of cases of eggs collected was greater on the Northwestern Ohio pick-up truck routes, yet it required an average of 3 hours less time to operate a route in December and 4 hours less in August than the Southeastern Ohio routes

The average total amount of time spent waiting for producers to get their eggs ready was only 10 5 minutes per route and it was not significantly different in the two areas.

The average total amount of time spent in non-business conversation was only 14.5 minutes per route with no significant difference between the two areas.

Miles per Case, Cases per Stop

Routes were shorter in Northwestern Ohio, yet more eggs were collected than on the routes in Southeastern Ohio. The number of miles traveled per case of eggs collected ranged from an average of .8 miles per case in Northwestern Ohio during the winter to an average of 2.5 miles per case in Southeastern Ohio during the summer. These differences in mileage required to collect a case of eggs represent a substantial difference in costs.

Time Required per Stop and per Case

The average amount of time spent per farm stop was 4.5 minutes. This represents the amount of time involved from the time the truck left the highway to make a farm stop until it returned to the highway. However, the average amount of time spent per stop per case of eggs was much less on the Northwestern Ohio routes because the average number of eggs picked up at each stop was larger. The time required varied from an average of 1 minute 12 seconds per case per stop in the Northwestern area during the winter, to an average of 3 minutes and 16 seconds per stop in the Southeastern area during the summer.

The average total amount of time spent loading the truck, running the route, and unloading the truck varied from 3 minutes 35 seconds per case in the Northwestern Ohio routes during the winter to an average of almost 12 minutes per case on the Southeastern Ohio routes during the summer.

This difference in amount of time required per case to operate the truck routes represents a substantial difference in the cost of collecting eggs.

Comparison of Most Efficient and Least Efficient Routes

In order to show the range in efficiency of the farm egg pick-up truck routes the most efficient route, which averaged a case of eggs every half mile, was compared with the least efficient route, which averaged only a case of eggs every 2.86 miles.

TABLE 2.—Comparison of the average amount of time spent per route on three farm egg "pick-up" truck routes in Northern Ohio with the average amount of time spent on three similar routes in Southern Ohio during August and December, 1949

Use of time in operating farm egg pick-up routes	August		December		Average all routes
	Northwest Ohio	Southeast Ohio	Northwest Ohio	Southeast Ohio	
Average length of routes (miles)	145.8	167.0	124.0	174.0	152.7
Average number of farm stops	44	45	46	60	49
Average volume of eggs collected (cases)	108	68	160	128	116
Average total amount of time (hours)—(loading, running route, unloading)	9:27:00	13:30:00	9:34:00	12:36:00	11:16:45
Average total amount of time required for farm stops (highway to highway) hours, minutes, seconds	2:58:50	3:42:00	3:38:30	4:12:00	3:37:45
Average total amount of time spent (eggs not ready) minutes, seconds	15:00	6:00	6:08	15:00	10:30
Average total amount of time spent (non-business conversation) minutes, seconds	11:50	21:00	13:05	12:00	14:29

The two truck routes made practically the same number of farm stops, but one traveled only 89.3 miles and picked up 162 cases of eggs, while the other traveled 163.3 miles and collected only 57 cases of eggs.

The average net amount of time spent operating the most efficient route was about 3.5 minutes per case compared to 14 minutes and 18 seconds per case on the least efficient route. This difference in time consumed in assembling eggs, plus the difference in mileage between a half mile per case on the most efficient route and 2.86 miles per case on the least efficient route, represents a substantial difference in costs of collection.

TABLE 3.—Comparison of average efficiency of three farm egg "pick-up" truck routes in Northern Ohio with three similar routes in Southern Ohio during August and December, 1949

Measure of efficiency	August		December		Average all routes
	Northwest Ohio	Southeast Ohio	Northwest Ohio	Southeast Ohio	
Average length of routes (miles)	145.8	167.0	124.0	174.0	152.7
Average number of farm stops	44	45	46	60	49
Average number farm stops—No eggs secured		4		2	1.5
Average volume of eggs picked up (cases)	108	68	160	128	116
Average number of miles per case	1.4	2.5	.8	1.4	1.3
Average number of cases of eggs per stop	2.5	1.5	3.5	2.1	2.4
Average net amount time spent per farm stop (highway to highway) (minutes)	4:04	4:56	4:45	4:12	4:29
Average net amount time spent per farm stop per case of eggs (highway to highway) (minutes)	1:40	3:16	1:12	1:58	2:01
Average total amount time spent per case of eggs (loading truck, running routes, unloading truck) (minutes)	5:15	11:55	3:35	5:54	6:40

Based on a labor cost of $1.20 per hour and truck operating cost of 10¢ per mile, the cost of operating the most efficient route was less than a half cent per dozen compared to almost 2 cents per dozen eggs collected on the least efficient route.

The two organizations supplying this data sold 235,923 cases of eggs during the year, covered by the study. The difference in the cost of collecting eggs between the most efficient and the least efficient route was 45 cents per case. If converted into terms of total volume of eggs sold, it would reduce the cost of operations by $106,165.35.

Location of Eggs on Farm When Collected

The management of the organizations operating the truck routes studied have been very successful in getting producers to cooperate in making the eggs readily accessible for the truck driver.

The producers have been impressed with the fact that a minute or two saved at each farm stop means a saving of an hour or more per day for the trucker.

TABLE 4.—Comparison of the most efficient and the least efficient farm egg "pick-up" truck routes of the six studied in Northern and Southern Ohio, August and December, 1949. (Based on average number of miles traveled per case of eggs collected)

Measure of efficiency	Most efficient route	Least efficient route
Length of route (miles)	89.3	163.3
Volume of eggs picked up (cases)	162	57
Total number of farm stops	45	44
Number of farm stops with no eggs	1	3
Total amount of time (loading, running route, unloading)	9:40:00	13:35:00
Average net amount of time spent per farm stop, highway to highway (minutes)	4:10	4:48
Average net amount time per farm stop per case of eggs, highway to highway (minutes)	1:06	4:42
Average total amount time per case of eggs (loading, running route, unloading truck) (minutes)	3:35	14:18
Average number of miles per case eggs	.6	2.9

TABLE 5.—Comparison of the estimated cost per case of collecting eggs on the most efficient and least efficient routes*

Route operating efficiency	Farm egg "pick-up" truck routes			
	Most efficient		Least efficient	
	Number	Cost in ¢	Number	Cost in ¢
Average mileage per case	.55	5.5	2.86	28.6
Average total amount time per case (minutes)	3:35	7.2	14:18	28.6
Total cost per case		12.7		57.2
Total cost per dozen		.4		1.9

*Based on labor at $1 20 per hour and truck operating cost of 10 cents per mile

Many of the producers carry the eggs up out of the basement and have them on the porch, sidewalk or in the kitchen when the truck arrives. Apparently more of them do this during the winter than during the summer, probably because they have more time to do it, and because there is less danger of deterioration in the quality of the eggs during the winter.

TABLE 6.—Farm location of eggs when picked up by trucks involved in Northern and Southern Ohio egg truck route study. 1949

Place where trucker picked up eggs on farm	Northern Ohio		Southern Ohio		Average all farms
	Winter	Summer	Winter	Summer	
	Percent	Percent	Percent	Percent	Percent
Porch*	49.3	35.3	36.8	30.4	37 9
Cellar	36.2	45.8	37.4	44.4	40.7
Sidewalk*	3.6	15.8	6.1	5.2	7.6
Kitchen*	5.8		3.3	3.7	3.2
Garage	2.9	.8	2.8	2.2	2.2
Spring house	.7	1.5			.5
Barn or shed			6.1	5.2	3.1
By the roadside*			3.9	.7	1.4
Store*			.6		.2
No eggs	1.5	.8	2.8	8.2	3.2
	100.0	100.0	1$$.0	100.0	100.0

*Eggs had been held in cellar and were put in their places just before truck arrived to save time for driver

TABLE 7.—Comparison of efficiency and costs per case of collecting eggs at the farm by four week periods of two organizations each operating 7 trucks in western Ohio and Eastern Indiana (August 28, 1949-September 2, 1950)

Four week period ending	Volume of eggs collected at farm (cases)		Total mileage collecting eggs at farm		Cases of eggs collected per mile		Cost per case of eggs collected at farm					
							Truck operating cost		Labor		Total	
	Plant No. 1	Plant No. 2	Plant No. 1	Plant No. 2	Plant No. 1	Plant No. 2	Plant No. 1	Plant No. 2	Plant No. 1	Plant No. 2	Plant No. 1	Plant No. 2
Sept. 24 ..	9,040	14,252	18,548	16,999	.49	.84	.163	.084	.205	.172	.368	.256
Oct. 22 .	11,509	18,622	19,821	17,551	.58	1.06	.126	.074	.154	.143	.280	.217
Nov. 19 ..	13,884	21,974	20,661	18,246	.67	1.20	.148	.061	.144	.139	.292	.200
Dec. 17 ..	15,053	23,112	21,163	18,688	.71	1.24	.133	.088	.139	.156	.272	.244
Jan. 14....	15,124	23,220	21,166	19,606	.71	1.18	.115	.078	.144	.165	.259	.243
Feb. 11 ...	13,801	22,286	20,770	20,218	.66	1.10	.126	.070	.145	.167	.271	.237
Mar. 11 ..	11,618	19,739	21,490	19,567	.54	1.01	.176	.084	.187	.183	.363	.267
Apr. 8	10,499	18,416	21,249	19,355	.49	.95	.234	.077	.193	.192	.427	.269
May 6	10,562	18,542	21,324	19,450	.50	.95	.174	.082	.161	.188	.335	.270
June 3	11,037	19,012	20,196	19,579	.55	.97	.150	.072	.148	.181	.298	.253
July 2 ...	10,037	17,383	20,299	19,576	.49	.89	.159	.079	.163	.203	.322	.282
July 29 ...	9,234	15,498	19,996	19,562	.46	.79	.151	.101	.167	.197	.318	.298
Sept. 2 ...	12,360	18,829	25,578	24,423	.48	.77	.155	.113	.179	.223	.334	.336
Total ...	153,678	250,885	272,265	252,820	.56	.99	.152	.081	.161	.176	.313	.257

ANALYSIS OF COSTS OF COLLECTING EGGS AT THE FARM

In order to study the actual cost of collecting eggs from farms, the records of the costs of operating two fleets of 7 trucks each was secured from two organizations, each of which operated in western Ohio and Eastern Indiana. The costs covered a period of one year from August 28, 1949 to September 2, 1950, and the data was compiled from the records of the organization.

Comparative Volume, Mileage and Trucking Costs per Case

In addition to the eggs picked up at the farms by their trucks, both organizations handle a large volume of eggs that are delivered to the plant by producers in the nearby territory.

The seven trucks of plant No. 1 traveled 272,265 miles in collecting 153,678 cases of eggs, while the seven trucks of plant No. 2 traveled only 252,820 miles in collecting 250,885 cases of eggs.

Therefore the trucks of plant No. 2 collected one case of eggs per mile traveled, while the trucks of plant No. 1 collected only .56 of a case of eggs per mile.

Both plants collected the most eggs per mile traveled during the four week period ending December 17 and the smallest number of eggs per mile traveled during the four week period from July 3 to September 2.

Because of the greater mileage traveled and the smaller volume of eggs collected, the average truck operating costs of plant No. 1 was 15.2 cents per case of eggs collected compared to only 8.1 cents per case of eggs collected by plant No. 2. The fluctuation in truck operating costs per case during the different periods of the year was affected more by large repair bills during certain periods than the seasonal change in the volume of eggs collected.

The cost of labor used by plant No. 1 in collecting eggs was 16.1 cents per case compared with 17.6 cents per case for plant No. 2.

The seasonal cost of labor per case of eggs collected was in reverse relationship to the volume of eggs collected. As the volume of eggs increased, the cost per case for labor decreased except during the periods when drivers were on vacation thus increasing the total labor cost.

The total cost of collecting eggs for plant No. 1 was 31.3 cents per case compared to 25.7 cents per case for plant No. 2.

The functions of the truck driver for these organizations are to leave the empty cases, pick up eggs, and leave the check for the eggs collected the previous week, hence the low cost of collecting eggs at the farm for midwest conditions.

Comparative Volume, Mileage and Trucking Costs per Mile

The type trucks used by the two organizations were quite similar in size, all having a capacity of about 200 cases of eggs each. The average

truck operating costs for gasoline, oil, tires, repairs, and miscellaneous was 6.3 cents per mile for both plants. The cost for insurance, depreciation and license was .9 of a cent per mile larger for plant No. 1.

There was no seasonal pattern in the gasoline, oil, tires, repairs and miscellaneous costs, plant No. 1 having its highest operating costs during the four week period ending April 8 and plant No. 2 having its highest operating costs during the period ending December 17. The cost of repairs or tire replacements seemed to be the most important factor determining the periods of highest operating costs.

The cost of insurance, depreciation and license was pro-rated fairly evenly throughout the year.

The labor cost in collecting eggs was 9.1 cents per mile for plant No. 1 and 17.5 cents per mile for plant No. 2. This relatively large difference in labor costs per mile as shown in Table 8 was the result of the policy of using two men on each truck operated by plant No. 2.

Total cost of labor and truck operating expenses was 17.7 cents per mile for plant No. 1 and 25.6 cents per mile for plant No. 2. The difference in total cost of collecting eggs per mile was almost entirely due to the use of two men on the trucks operated by plant No. 2.

Areas Served and Operating Policies. The organization operating plant No. 2 does not serve as large an area of production as plant No. 1, and it also collects a much larger percentage of the total volume of eggs within a radius of 75 miles of the plant.

In outlying areas, plant No. 2 has also established some receiving points where producers deliver their eggs thus adding to the efficiency of the truck routes.

Plant No. 1 on the other hand secures a much smaller percentage of the eggs produced in the area within 75 miles of the plant but has developed a large business at a long distance from the plant in Indiana. This involves more time and mileage in collecting the eggs as is shown by the fact that the trucks of plant No. 1 collected only .56 of a case per mile while plant No. 2 collected almost a case of eggs per mile traveled.

The truck operating costs of plant No. 1 can be materially reduced by building its business in the production area immediately surrounding the plant. The operating policy of plant No. 2 in using two men on a truck resulted in a labor cost for collecting eggs almost twice as high as the other plant.

A change of this policy would probably reduce the collection cost of plant No. 2 by as much as one-quarter of a cent per dozen, or $18,816.37 for the year based on the volume of eggs collected at the farm during the period of this study.

TABLE 8.—Comparison of costs per mile of collecting eggs at the farm by four week periods of two organizations each operating 7 trucks in Western Ohio and Eastern Indiana (August 28, 1949-September 2, 1950)

Four week period ending	Volume of eggs collected at farm (cases)		Total mileage collecting eggs at farm		Truck operating costs collecting eggs per mile: Gasoline, oil, tires, repairs and misc.		Insurance depreciation license		Total truck operating costs		Labor cost collecting eggs per mile		Total cost of collecting eggs per mile	
	Plant No. 1	Plant No 2	Plant No 1	Plant No. 2	Plant No 1	Plant No. 2	Plant No 1	Plant No 2	Plant No 1	Plant No 2	Plant No 1	Plant No 2	Plant No. 1	Plant No 2
Sept. 24	9,040	14,252	18,548	16,999	.047	.052	.032	.018	.079	.070	.100	.144	.179	.214
Oct. 22	11,509	18,622	19,821	17,551	.043	.061	.031	.018	.074	.079	.089	.152	.163	.231
Nov. 19	13,884	21,974	20,661	18,246	.071	.056	.029	.018	.100	.074	.097	.167	.197	.241
Dec. 17	15,053	23,112	21,163	18,688	.066	.091	.028	.018	.094	.109	.099	.193	.193	.302
Jan. 14	15,124	23,220	21,166	19,606	.055	.074	.027	.017	.082	.091	.103	.195	.185	.286
Feb. 11	13,801	22,286	20,770	20,218	.058	.060	.026	.016	.084	.076	.096	.184	.180	.260
Mar. 11	11,618	19,739	21,490	19,567	.070	.069	.025	.016	.095	.085	.101	.185	.196	.270
Apr. 8	10,499	18,416	21,249	19,355	.090	.055	.025	.018	.115	.073	.095	.182	.210	.255
May 6	10,562	18,542	21,324	19,450	.060	.059	.025	.019	.085	.078	.080	.179	.165	.257
June 3	11,037	19,012	20,196	19,579	.055	.051	.027	.019	.082	.070	.081	.176	.163	.246
July 2	10,037	17,383	20,299	19,576	.052	.051	.027	.020	.079	.071	.081	.180	.160	.251
July 29	9,234	15,498	19,996	19,562	.043	.062	.027	.018	.070	.080	.077	.156	.147	.236
Sept. 2	12,360	18,829	25,578	24,423	.053	.072	.021	.015	.074	.087	.086	.172	.160	.259
Total	153,678	250,885	272,265	252,820	.063	.063	.027	.018	.086	.081	.091	.175	.177	.256

SUMMARY

1. An area of relative dense poultry population offers a better opportunity for low costs in collecting eggs from farms because of the possibilities of less mileage to cover a route and more eggs per farm stop.

2. The average volume of eggs collected on each of the six farm egg pick-up truck routes studied during the spring and winter of 1949 was 116 cases.

The largest average volume of eggs per route was 160 cases in Northwestern Ohio during the winter and the smallest was 68 cases per route in Southeastern Ohio during the summer.

3. The average distance covered on each of the six farm egg pick-up truck routes studied during the spring and winter of 1949 was 152.7 miles.

The routes averaging the shortest distance were in Northwestern Ohio during the winter with 124 miles. The routes averaging the longest distance were in Southeastern Ohio during the winter with 174 miles.

4. The average amount of time required to operate each of the six farm egg pick-up truck routes was 11 hours 16 minutes and 45 seconds. The Northwestern Ohio truck routes required the least amount of time averaging 9 hours and 34 minutes per route during the winter and the Southeastern Ohio routes required the greatest amount of time averaging 13 hours and 30 minutes per route during the summer.

An average of 10.5 minutes per truck route was wasted because the eggs were not ready and 14.5 minutes per truck route was wasted by non-business conversation on the six truck routes studied.

5. An average of 49 farm stops were made on each of the six truck routes studied, ranging from an average of 44 stops per route during the summer in Northwestern Ohio to 60 stops per route during the winter in Southeastern Ohio.

6. The six truck routes studied averaged 1.3 miles per case of eggs collected and ranged from .8 of a mile per case of eggs collected in Northwestern Ohio during the winter to 2.5 miles per case in Southeastern Ohio during the summer.

7. An average of 2.38 cases of eggs were collected at each stop on all of the routes studied, ranging from an average of 3.4 cases per stop in Northwestern Ohio during the winter to an average of 1.5 cases per stop on the Southeastern Ohio routes during the summer.

8. An average of 4 minutes 29 seconds were consumed from the time the truck left the highway to make a farm stop until it returned to the highway.

The routes requiring the smallest amount of time were in Northwestern Ohio during the summer when it took an average of four minutes and four seconds per stop, and the routes averaging the greatest amount were in Southeastern Ohio during the summer when it took an average of 4 minutes and 56 seconds per stop.

9. The average total amount of time spent in collecting eggs on the six routes studied was 6 minutes and 40 seconds per case. The amount of time required ranged from 3 minutes and 35 seconds per case in Northwestern Ohio during the winter to 11 minutes and 55 seconds per case in Southeastern Ohio during the summer.

10. A comparison of the single most efficient route with the single least efficient route showed that the former covered only 89.3 miles in collecting 162 cases of eggs while the least efficient route covered 163.3 miles in collecting only 57 cases of eggs.

The most efficient route covered .6 of a mile per case of eggs collected while the least efficient covered 2.9 miles per case.

The total amount of time required to collect eggs on the most efficient route was 3 minutes 35 seconds per case and on the least efficient route 14 minutes 18 seconds per case.

11. The eggs were held in the cellar on a very high percentage of the farms included in the study; however, many of the producers carried the eggs to the porch, sidewalk, or kitchen just before the egg truck arrived in order to save the driver time.

Some few of the producers with bad lanes took the eggs out to the main road especially during the winter.

12. A study was made of the costs of collecting eggs from the farm by two marketing organizations each operating a fleet of seven farm pick-up trucks in different sections of western Ohio and Eastern Indiana. During the 12 months period studied, the trucks of one organization covered 272,265 miles and collected 153,678 cases of eggs, while the other covered only 252,820 miles in collecting 250,885 cases of eggs.

The former plant collected an average of only .56 of a case of eggs per mile covered by its trucks, while the latter organization collected an average of .99 of a case of eggs per mile.

13. Because of the greater distance covered in collecting a small volume of eggs, Plant #1 had an average truck operating cost of 15.2 cents per case of eggs collected, while Plant #2 had an average truck operating cost of only 8.1 cents per case of eggs.

14. Because of the policy of using two men on a truck, Plant #2 had a labor cost for collecting eggs of 17.6 cents per case while Plant #1 had a labor cost of 16.1 cents per case.

15. The total cost of collecting eggs at the farm was 25.7 cents per case for Plant #2 and 31.3 cents per case for Plant #1.

16. The cost per mile for gasoline, oil, tires, repairs, and miscellaneous costs was exactly the same for both fleets of trucks and there was only a slight difference in cost per mile for insurance, depreciation and license. The average total truck operating cost for one plant was .086 cents per mile and for the other .081 cents per mile.

The labor cost of collecting eggs on the routes of Plant #1 was .091 cents per mile and on the routes of Plant #2 was 17.5 cents per mile.

The total cost of collecting eggs on the farm for Plant #1 was 17.7 cents per mile and for Plant #2, 25.6 cents per mile.

CONCLUSIONS

1. Because of the greater density of poultry population of Northwestern Ohio, the cost of collecting eggs is likely to be substantially less than in the sparsely poultry populated area of Southeastern Ohio.

2. The farm egg pick-up truck routes in the densely poultry populated area made practically the same number of stops as in the sparsely poultry populated areas but the mileage covered was substantially less and the number of eggs collected, substantially more, making for a higher degree of efficiency and a lower cost of collection.

3. Producers cooperated with the organizations by having their eggs ready so that very little time was wasted in either waiting for the producer to get the eggs ready or in non-business conversations on all of the routes studied.

4. It required about the same amount of time to make a farm stop regardless of the volume of eggs collected. However, there was considerable difference in the amount of time spent per farm stop per case of eggs collected.

5. Based on a labor cost of $1.20 per hour and a truck operating cost of 10 cents a mile, it cost 1.5 cents per dozen more to collect the eggs on the least efficient route than on the most efficient route.

6. The cost and efficiency of collecting eggs from the farm can be materially improved by the cooperation of producers in getting the eggs out of the cellar before the truck arrives.

7. The two egg marketing organizations operating in different sections of Western Ohio and Eastern Indiana each have an opportunity to reduce the cost of collecting eggs from the farms:

(a) The organization operating Plant No. 1 has a possibility of greatly reducing the mileage per case of eggs collected by intensifying the expansion of its activities in the concentrated production area adjacent to the plant.

(b) The organization operating Plant No. 2 can greatly reduce the cost of labor in collecting eggs from the farm by using only one man per truck.

8. It cost the two organizations, each operating a fleet of seven trucks, an average of less than one cent per dozen to collect eggs from the farms. This is less than the service charge most marketing organizations pay to receiving stations and certainly picking the eggs up at the farm makes for the procurement of a far better quality egg.

Collecting eggs at the farm is a necessity for most marketing agencies operating a quality egg marketing program. This data demonstrates that farm collection of eggs can be done economically under Middlewestern conditions.

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